

Convergence between *Terpsiphone corvina*, *T. atrochalybea* and *Piezorhynchus alecto*

by P. W. Greig-Smith

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During studies of endemic landbirds in the Seychelles islands, Indian Ocean, in Sept and Oct 1976, I was impressed by the close resemblance in plumage of the Seychelles Paradise Flycatcher *Terpsiphone corvina* to a species which I observed in Papua New Guinea in 1973, the Shining Monarch Flycatcher *Piezorhynchus alecto*. A third species, the São Tomé Paradise Flycatcher *Terpsiphone atrochalybea*, is also very similar. This paper describes the extent of the similarities, and discusses whether they can be attributed to similar selection pressures. Several *P. alecto* of both sexes, and one male *T. corvina* were mist-netted and examined in the field, and subsequently skins of all three species were examined in the British Museum (Natural History).

T. corvina now exists as a single population on La Digue, though previously occurring also on other islands (see Benson 1971). The species is illustrated by Newton (1867) and Penny (1974). The adult male is entirely glossy blue black, with a pale blue fleshy eye-ring extending in a line to the corner of the gape. The bill is blue, and the gape vivid yellow-orange. As in most Paradise Flycatchers, the central tail feathers are greatly elongated (up to 300 mm, see Benson 1971). The female's plumage is strikingly different, the upperparts being bright rufous, the underparts white, and the whole head glossy black. The tail is not elongated as in the male, and there is no line between the blue eye-ring and the bill.

P. alecto is widely distributed throughout the lowland forests of New Guinea (Rand & Gilliard 1967). I observed *P. a. chalybeocephalus* in the Sepik District, Papua New Guinea, but all subspecies have similar plumage patterns. The male is entirely glossy blue black, and has a blue bill and yellow-orange gape similar to male *T. corvina*. The only major difference is the lack of a long tail and a blue eye-ring in *P. alecto*. The female has a plumage pattern very similar to female *T. corvina*, differing only in the lesser extent of the black plumage on the head. I could not distinguish the shade of rufous on the upperparts of the two species when skins were compared.

T. atrochalybea is restricted to São Tomé in the Gulf of Guinea (Bannerman 1936). The male is entirely glossy blue black, with a long tail. The female resembles females of the other two species (*P. alecto* more closely than *T. corvina*, since the throat is white), except that the underparts are mottled with blue black. The bill and legs are blue.

Can these resemblances be due to a close systematic relationship? Keast (1958) placed *alecto* in *Piezorhynchus*, but others have referred the species to *Monarcha* (Rand & Gilliard 1967, Morony *et al.* 1975) or *Myiagra* (e.g. Diamond 1972, Storr 1977, Slater 1975). These three genera have not been considered to be particularly closely related to *Terpsiphone*, though all are in the same subfamily (Muscicapidae; Monarchinae). However, it is very likely that this is the case, and that the genus *Terpsiphone* is most closely related to the genus *Piezorhynchus* (I. C. J. Galbraith *in litt.*). At least some of the resemblances may therefore be ancestral, especially as the variation in colour and pattern of plumage in these genera is rather limited. Nevertheless, because *T. corvina* and *T. atrochalybea* are probably independent derivatives of

T. viridis of continental Africa (Hall & Moreau 1970, Benson 1971), which is much less like *P. alecto*, it is highly improbable that *P. alecto* is most closely related to either of the two island species within *Terpsiphone*, and therefore it appears that there has been convergent, or at least parallel, development of the resemblances between *Piezorhynchus* and *Terpsiphone*.

It seems appropriate to seek parallels in the ecology of the species, particularly as Holyoak & Thibault (1977) have demonstrated the adaptiveness of plumage patterns and colours in some other monarchine flycatchers. Sexual dimorphism in plumage is usually associated with a division of labour between the sexes. In *T. corvina*, the male carries out territory defence (Gaymer *et al.* 1969, Penny 1974, pers. obs.), while the female does most nest-building, incubation and feeding of nestlings, although assisted occasionally by the male (Penny 1974, Fayon 1971, Fraser 1972, pers. obs.). The scant information available for *P. alecto* suggests that the roles of the sexes are broadly similar to those in *T. corvina*, the female carrying out most nest duties (Gilliard & Lecroy 1966, Rand & Gilliard 1967, pers. obs.). If plumage patterns have evolved to be appropriate to these roles, females might be expected to have camouflage to reduce predation at the nest, while males might have more conspicuous display plumage. In the shady *Terminalia-Calophyllum* woodland in which *T. corvina* breeds on La Digue, I found males to be very conspicuous, and females, being both disruptively patterned and counter-shaded, less so. Fayon (1971) also considered females to be more difficult to detect. *P. alecto* occurs in structurally similar woodland, though also in mangroves and dense forest understory (Gilliard & Lecroy 1966, Rand & Gilliard 1967, pers. obs.), and the nest is built in low, exposed branches, as in *T. corvina* (see Rand & Gilliard 1967, Fraser 1972). I found males more conspicuous than females, though both were less obvious than *T. corvina*.

The gross patterns of plumage of these two species appear to be appropriate to the sexes' roles in nesting and territoriality. Unfortunately, even less is known of the biology of *T. atrochalybea*, and it is not possible to assess whether it shows similar ecology and behaviour, although this is possible (see Bannerman 1936, Snow 1950).

Holyoak & Thibault (1977) interpreted the plumage saturation of Polynesian *Pomarea* flycatchers as providing camouflage from their insect prey (although in some species it may also have a display function). Although the two *Terpsiphone* species and *P. alecto* are insectivorous (the former by flycatching, the latter by gleaning), and Fayon (1971) and A. S. Cheke (pers. comm.) thought that male *T. corvina* spend more time than females in the more shaded lower parts of trees, it seems doubtful that selection pressures associated with foraging niches alone could have produced such extreme sexual dimorphism.

In both *T. corvina* and *P. alecto*, the orange-yellow gape is displayed most prominently when the bill is opened wide to utter a harsh scolding call, together with erection of the black crown feathers. This call, which may be a threat display, sounds very similar in the two species, and *T. atrochalybea* apparently has a similar call (Bannerman 1936), perhaps a reflection of their probable close systematic relationship.

Although plumage resemblance appears to be correlated with general similarities in ecology, at least for *T. corvina* and *P. alecto*, there is no obvious peculiarity of these three species which sets them aside from other monarchine

flycatchers. (However, in some species with less extreme sexual dimorphism, the sexes take a more equal role in nesting—e.g. *T. viridis* (Moreau 1949, Skead 1967).) The convergence of *T. corvina* and *T. atrochalybea* might be a consequence of competitive release and relief from predation in similar small island environments, but this can hardly be so in *P. alecto*, which exists in very species-rich communities. Perhaps there are subtle features of their habitats which make these particular plumage patterns adaptive, while a shared phylogeny and conservatism of plumage probably contribute to the resemblance.

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A new race of *Parisoma lugens* from the highlands of Bale, Ethiopia

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In the material brought back from Ethiopia by various expeditions organised by the Laboratoire de Zoologie (Mammifères et Oiseaux), Muséum National d'Histoire Naturelle, Paris, there is a series of 15 *Parisoma lugens*. These specimens are not homogeneous, 4 of them being easily distinguishable by their dark coloration.